

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

Claim 1 (Previously Presented): A coated molding, comprising:
a molding mainly comprising a thermoplastic resin; and
a coating film coated on at least a surface of said molding;
wherein a resin constituting said coating film and said resin constituting said molding have an affinity for each other at least at interfaces therebetween or in a boundary region; and
wherein said resin constituting said coating film comprises a thermoplastic resin capable of repeatedly molding by heating and melting after mixing with said thermoplastic resin used as a main constituent of said molding.

Claim 2 (Previously Presented): The coated molding according to Claim 1, wherein said thermoplastic resin constituting said coating film is dispersed in the main constituent of said molding and said thermoplastic resin constituting said coating film has the same nature as or a nature different from said thermoplastic resin used as the main constituent of said molding and both thermoplastic resins mutually exhibit a nature of heat fusion, heat adhesion, heat stickiness, heat bonding, heat attachment, heat adherence, heat affinity, heat wetness or heat melting.

Claim 3 (Previously Presented): The coated molding according to Claim 1, wherein said thermoplastic resin of said coating film has the same nature as or a nature different from said thermoplastic resin used as the main constituent of said molding and exhibits compatibility or miscibility with said thermoplastic resin used as the main constituent of said molding.

Claim 4 (Previously Presented): The coated molding according to Claim 1, wherein said thermoplastic resin constituting said coating film has the same nature as or a nature different from said thermoplastic resin used as the main constituent of said molding, and is dispersed in said thermoplastic resin used as the main constituent of said molding so as to be able to be stabilized as having a sea-island structure or other structure.

Claim 5 (Previously Presented): The coated molding according to Claim 1, wherein said thermoplastic resin of said coating film has the same nature as or a nature different from said thermoplastic resin used as the main constituent of said molding and is capable of being mixed at a molecular level with said thermoplastic resin used as the main constituent of said molding.

Claim 6 (Previously Presented): The coated molding according to Claim 3, wherein said thermoplastic resin used as the main constituent of said molding and said thermoplastic resin of said coating film comprise the same resin, or resins having the same skeleton or same branch, or different resins having similar properties.

Claim 7 (Previously Presented): The coated molding according to Claim 3, wherein said thermoplastic resin used as the main constituent of said molding comprises at least one member selected from the group consisting of styrene resins, vinyl resins, amino resins, olefin resins, allied resins and similar resins, and

wherein said thermoplastic resin used as a main constituent of said coating film comprises at least one member selected from the group consisting of acrylic resins, styrene resins, vinyl resins, amino resins, olefin resins, allied resins and similar resins.

Claim 8 (Previously Presented): The coated molding according to Claim 3, wherein said thermoplastic resin used as the main constituent of said molding comprises an ABS resin, and

said thermoplastic resin used as a main constituent of said coating film comprises an acrylonitrile-styrene copolymer resin, a styrene-modified acrylic resin or a thermoplastic acrylic resin.

Claim 9 (Withdrawn): The coated molding according to Claim 3, wherein said thermoplastic resin used as the main constituent of said molding comprises a high impact polystyrene resin, and

said thermoplastic resin used as a main constituent of said coating film comprises a polystyrene resin or a styrene-modified acrylic resin.

Claim 10 (Withdrawn): The coated molding according to Claim 3, wherein said thermoplastic resin used as the main constituent of said molding comprises a modified polyphenylene oxide (ether) resin, and

wherein said thermoplastic resin of said coating film comprises polystyrene resin or a styrene-modified acrylic resin.

Claim 11 (Withdrawn): The coated molding according to Claim 3, wherein said thermoplastic resin used as the main constituent of said molding comprises polypropylene resin or polyethylene resin, and

wherein said thermoplastic resin of said coating film comprises a chlorinated polypropylene resin or a halogenated polyolefin resin.

Claim 12 (Previously Presented): The coated molding according to Claim 4, wherein said thermoplastic resin of said coating film is dispersed in the form of islands in said thermoplastic resin used as the main constituent of said molding so as to have a sea-island structure or other structure, and

wherein said thermoplastic resin of said coating film dispersed in the form of islands has an aspect ratio of from 0.2 to 1.

Claim 13 (Previously Presented): A coated molding, comprising:

a molding, coated on a surface thereof with a paint comprising a thermoplastic resin capable of repeatedly molding by heating and melting after mixing with a thermoplastic resin used as a constituent of said molding, said molding being molded by heating and melting,

said thermoplastic resin as the main constituent of the paint is dispersed in the form of island within said thermoplastic resin as the constituent of the molding, and

wherein said paint, mainly comprising a thermoplastic resin capable of repeatedly molding by heating and melting after mixing with the thermoplastic resin as the constituent of the molding, is painted on the molding molded by heating and melting.

Claim 14 (Previously Presented): The coated molding according to Claim 13, wherein an aspect ratio of the thermoplastic resin as the main constituent of the paint dispersed in the form of islands is from 0.1 to 1.

Claim 15 (Previously Presented): A coated molding, comprising:

a molding mainly comprising a thermoplastic resin; and

a coating film directly attached on a surface of said molding;

wherein a resin constituting said coating film and said resin constituting said molding have an affinity for each other at least at interfaces therebetween or in a boundary region, and

said coating film comprises a thermoplastic resin capable of repeatedly molding by heating and melting after mixing with said thermoplastic resin used as a main constituent of said molding, and

said coating film is directly coated to an entire outer surface of said molding, or
said coating film is directly coated to a part of an outer or inner surface of said molding.

Claim 16 (Previously Presented): A method for manufacturing of a coated molding, comprising:

molding molded articles from a thermoplastic resin, and
coating a paint on a surface of said molded articles,
wherein said paint comprises as a main constituent thereof a thermoplastic resin capable of repeatedly molding by heating and melting after mixing with said thermoplastic resin used as a main constituent of said molded article.

Claim 17 (Previously Presented): A method for recycling of a coated molding, comprising:

crushing a molding coated with a paint comprising a thermoplastic resin which is capable of repeatedly molding by heating and melting after mixing with a thermoplastic resin of said molding and which has the same nature as or a nature different from the thermoplastic resin of said molding,

thereby obtaining a crushed and coated molding or pelletized coated molding;

re-molding a molded article from said crushed and coated molding or pelletized coated molding; and

coating said re-molded article with a paint comprising a thermoplastic resin which has the same nature as or a nature different from said thermoplastic resin comprising said molding and is capable of repeatedly molding by heating and melting after mixing with said thermoplastic resin comprising said molding.

Claim 18 (Previously Presented): The method for recycling of a coated molding according to Claim 17, comprising:

providing a crushed molding as it is, or mixing and melting the crushed molding to extrude the melted mixture in the form of pellets; and

re-molding a molded article from the crushed molding or said pellets.

Claim 19 (Previously Presented): The method for recycling of a coated molding according to Claim 18, comprising:

mixing at a given ratio crushed pieces or pellets of plural types of coated moldings, which each comprise a thermoplastic resin as a main constituent of moldings and a paint comprising a thermoplastic resin coated on the moldings, said thermoplastic resin of the paint having affinity for the thermoplastic resin of the moldings at least at interfaces or in a boundary region established on extrusion and capable of repeatedly molding after mixing with said first-mentioned thermoplastic resin, to obtain a mixture; and re-molding said mixture.

Claim 20 (Previously Presented): The method for recycling of a coated molding according to Claim 19, wherein

at least one of said coated moldings is a foamed product, and said at least one and the other of coated moldings are melt mixed in such a state as to exert a given back pressure thereon so that a generated gas is dissolved under pressure in a resin melt.

Claim 21 (Previously Presented): The method for recycling of a coated molding according to Claim 20, wherein a hermetically sealed mold whose mating faces are sealed is pressurized to a level higher than an atmospheric pressure, and
a resin melt is injected into the sealed mold through a switching mechanism.

Claim 22 (Previously Presented): The method for recycling of a coated molding according to Claim 18, comprising:

crushing, melt mixing and extruding into pellets first coated moldings each comprising an ABS resin molding coated with a paint based on a varnish comprising a styrene-modified acrylic resin; and

crushing, melt mixing and extruding into pellets second coated moldings each comprising a PC resin molding coated with a paint based on a varnish comprising a styrene-modified acrylic resin.

Claim 23 (Previously Presented): The method for recycling of a coated molding according to Claim 18, further comprising adding a compatibilizing agent at a given ratio by weight to said pellets.

Claim 24 (Previously Presented): The method for recycling of a coated molding according to Claim 23 wherein a ratio of said compatibilizing agent is 1 to 15% by weight.

Claim 25 (Previously Presented): The method for recycling of a coated molding according to Claim 19, comprising:

crushing, melt mixing and extruding into pellets first coated moldings each including an ABS resin molding coated with a paint based on a varnish comprising a styrene-modified acrylic resin; and

crushing, melt mixing and extruding into pellets second moldings of a PET resin.

Claim 26 (Previously Presented): The method for recycling of a coated molding according to Claim 23, further comprising mixing at a given ratio and heating the pellets of the first and second moldings for a given time, and

molding the thus heated mixed pellets.

Claim 27 (Previously Presented): The method for recycling of a coated molding according to Claim 26, further comprising:

coating moldings obtained by molding the heated mixed pellets with paint based on a varnish comprising a styrene-modified acrylic resin.

Claim 28 (Previously Presented): The method for recycling of a coated molding according to Claim 19, comprising:

crushing first coated moldings each including an ABS resin molding coated with a paint based on a varnish comprising a styrene-modified acrylic resin, to obtain crushed first moldings; melt mixing and extruding said crushed first moldings into pellets; and

crushing second coated moldings comprising a PMMA resin, melt mixing and extruding into pellets.

Claim 29 (Previously Presented): The method for recycling of a coated molding according to Claim 28, wherein both pellets are mixed and molded to obtain moldings, and said moldings are coated with a first paint based on a varnish comprising an acrylic acid nitrile-styrene copolymer resin.

Claim 30 (Withdrawn): The method for recycling of a coated molding according to Claim 19, comprising

crushing first coated moldings comprising a HIPS resin, melt mixing and extruding into pellets;

crushing second coated moldings comprising a foamed PS resin material, melt mixing and extruding into pellets; and

mixing the pellets of the first and second moldings and molding the mixed pellets.

Claim 31 (Withdrawn): The method for recycling of a coated molding according to Claim 30, wherein the resultant moldings are coated with a second paint based on a polystyrene resin varnish.

Claim 32 (Previously Presented): The method for recycling of a coated molding according to Claim 17, wherein the pellets obtained by melt mixing the crushed molding and extruding are mixed with a given amount of a virgin resin or a component of said virgin resin, serving as a recycle aid, for said coated molding, and the mixture is molded in order to obtain a molding.

Claim 33 (Previously Presented): The method for recycling of a coated molding according to Claim 32, wherein a given amount of at least one addition agent selected from

the group consisting of reinforcing materials, fillers and other kinds of addition agents are added to the recycle aid, and the mixture is molded in order to obtain a molding.

Claim 34 (Previously Presented): The method for recycling of a coated molding according to Claim 17, wherein a refused toner is added to crushed pieces or pellets of a molding of a thermoplastic resin exhibiting at least affinity for a thermoplastic resin constituting said refused toner at a given ratio.

Claim 35 (Previously Presented): A paint for resin moldings, comprising:
a thermoplastic resin which has the same nature as or a nature different from a thermoplastic resin of a coated resin molding and is capable of repeatedly molding after mixing with the thermoplastic resin of the coated resin molding.

Claim 36 (Previously Presented): The paint for resin moldings according to Claim 35, wherein said thermoplastic resin used as a main constituent of said paint comprises the same resin, a resin having the same skeleton or branch as the thermoplastic resin, or a different type of resin having similar properties.

Claim 37 (Previously Presented): The paint for resin moldings according to Claim 35, wherein said thermoplastic resin used as a main constituent of said paint comprises a resin selected from the group consisting of acrylic acid nitrile-styrene copolymer resin, polystyrene resin, styrene-modified acrylic resins, thermoplastic acrylic resins and halogenated polyolefins.

Claim 38 (Previously Presented): The paint for resin moldings according to Claim 35, wherein said thermoplastic resin comprising said paint is a single kind of thermoplastic resin.

Claim 39 (Previously Presented): The paint for resin moldings according to Claim 35, wherein said thermoplastic resin comprising said paint comprises at least two kinds of thermoplastic resins.

Claim 40 (Previously Presented): The paint for resin moldings according to Claim 36, wherein said thermoplastic resin comprising said paint comprises a styrene-modified acrylic resin having a weight average molecular weight ranging from 10,000 to 60,000.

Claim 41 (Previously Presented): A The paint for resin moldings according to Claim 40, wherein said paint further comprises a solvent which has a boiling point determined in response to a molecular weight of said thermoplastic resin mainly comprising said paint.

Claim 42 (Previously Presented): The paint for resin moldings according to Claim 35, comprising a thermoplastic resin, which has the same nature as or a different nature from a thermoplastic resin used as a constituent of a coated resin molding and is capable of repeatedly molding after mixing with the second-mentioned thermoplastic resin, a solvent, and a given amount of a refused toner serving as a pigment.

Claim 43 (Previously Presented): A method for preparing a paint for resin moldings, comprising:

dispersing or melting the following components

a thermoplastic resin, and

optionally, at least one member selected from the group consisting of a solvent, water a pigment, a dye, a surface conditioner and another addition agent, to obtain a paint;

wherein said thermoplastic resin has the same nature as or different nature from a thermoplastic resin for a resin molding to be coated and is capable of repeatedly molding after mixing with the thermoplastic resin for the molding.

Claim 44 (Previously Presented): The method for preparing a paint for resin moldings according to Claim 43, comprising:

adding a solvent having a boiling point which is determined in response to a molecular weight of the thermoplastic resin used as the main constituent of the paint.

Claim 45 (Previously Presented): The method for preparing a paint for resin moldings according to Claim 44, comprising:

adding a mixed solvent to said thermoplastic resin.

Claim 46 (Previously Presented): The method for preparing a paint for resin moldings according to Claim 45, comprising:

charging an acrylonitrile-styrene resin in a mixed solvent of toluene and butyl acetate while agitating so as to obtain a given solid content and continuing agitation for a given time until the acrylonitrile-styrene resin is dissolved in the mixed solvent to obtain a varnish;

mixing butyl acetate, titanium oxide, calcium carbonate, talc iron oxide yellow and carbon black under agitation for a given time to provide a mill base and dispersing the mill base in the varnish until a given particle size is attained; and

adding toluene, butyl acetate, cyclohexanone and a surface conditioner to the resultant dispersion to obtain a first paint.

Claim 47 (Previously Presented): The method for preparing a paint for resin moldings according to Claim 45, comprising:

charging polystyrene resin in a mixed solvent of toluene and butyl acetate while agitating so as to obtain a given solid content and continuing agitation for a given time until the polystyrene resin is dissolved in the mixed solvent to obtain a varnish;

mixing butyl acetate, titanium oxide, calcium carbonate, talc iron oxide yellow and carbon black under agitation for a given time to provide a mill base and dispersing the mill base in the varnish until a given particle size is attained; and

adding toluene, butyl acetate, cyclohexanone and a surface conditioner to the resultant dispersion to obtain a second paint.

Claim 48 (Previously Presented): The method for preparing a paint for resin moldings according to Claim 45,

comprising:

preparing a styrene-modified acrylic resin varnish;

mixing butyl acetate, toluene, titanium oxide, calcium carbonate, talc iron oxide yellow and carbon black under agitation for a given time to provide a mill base and dispersing the mill base in the varnish until a given particle size is attained; and

adding toluene, butyl acetate, and a surface conditioner to the resultant dispersion to obtain a third paint.

Claims 49-51 (Cancelled):

Claim 52 (Previously Presented): A method for evaluating recyclability of a reproduced coated molding, comprising:

providing molding of test piece obtained by crushing and molding coated moldings which include moldings and a film formed on surfaces of the moldings by coating a paint constituted mainly of a thermoplastic resin having the same nature as or different nature from a thermoplastic resin used as a main constituent of the moldings and capable of repeatedly molding after mixing with the thermoplastic resin for said last-mentioned moldings;

coating the said molded test piece with a paint, which is constituted mainly of a thermoplastic resin having the same nature as or different nature from a thermoplastic resin used as a main constituent of said molded test piece and capable of repeatedly molding after mixing with the thermoplastic resin for said molded test piece to provide the reproduced and coated test piece; and

subjecting said coated test piece or a cross hatch test to evaluate recyclability of the reproduced coated test piece based on the results of the test.

Claim 53 (Cancelled):

Claim 54 (Currently Amended): ~~The method for evaluating recyclability of a reproduced coated molding according to Claim 53,~~

A method for evaluating recyclability of a reproduced coated molding, comprising:
providing a mixed resin of a thermoplastic resin of a molding and a thermoplastic resin of a paint at a given ratio,
molding the mixed resin into a test piece molding, and

subjecting the test piece molding to a cross hatch test to evaluate recyclability of the reproduced coated molding based on the results of the test

wherein a state of dispersion of the thermoplastic resin used as a main constituent of said paint in a thermoplastic resin matrix used as a main constituent of the test piece which is a reproduced coated molding is evaluated by observation through a microphotograph.

Claim 55 (Previously Presented): The method for evaluating recyclability of a reproduced coated molding according to Claim 54, comprising:

repeating recycling of a reproduced-coated molding, and
conducting a test for film properties in every repetition to evaluate recyclability of the reproduced-coated molding in every repetition from the transition in the results of the test.

Claim 56 (Previously Presented): The method for evaluating recyclability of a reproduced coated molding according to Claim 55, comprising:

repeating recycling of a reproduced coated molding, and
measuring mechanical strength, thermal properties and other physical properties in every repetition to evaluate recyclability of the reproduced coated molding in every repetition from the transition in the results of the measured physical properties.

Claim 57 (Previously Presented): The coated molding according to Claim 13, wherein an aspect ratio of the thermoplastic resin as the main constituent of the paint dispersed in the form of islands is from 0.2 to 1.

Claim 58 (Previously Presented): A method for recycling a coated molding, comprising:

crushing or pelletizing a molding, coated on a surface thereof with a paint comprising a thermoplastic resin, to obtain a crushed or palletized molding;

molding said crushed or pelletized molding by heating and melting,

so that said thermoplastic resin of said paint is dispersed in said thermoplastic resin of said molding;

wherein said thermoplastic resin of said paint has the same nature as or a nature different from a thermoplastic resin of said molding or wherein said thermoplastic resin is capable of repeatedly molding by heating and melting after mixing with said thermoplastic resin of said molding.

BASIS FOR THE AMENDMENT

Claims 49-51 and 53 have been cancelled.

The limitations of Claim 53 have been included in Claim 54.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1-48, 52 and 54-58 will now be active in this application. Claims 9-11 and 30-31 are withdrawn from consideration as drawn to non-elected subject matter.

INTERVIEW SUMMARY

Applicants wish to thank Examiner McDowell for the helpful and courteous discussion with Applicants' Representative on October 13, 2004. During this discussion it was noted that none of the cited references alone or in combination disclose or suggest that a thermoplastic resin (used as a coating for a molding) is capable of repeatedly molding after mixing with a thermoplastic resin used as a **main constituent of the molding** itself. It appeared that the Examiner may be willing to allow this case provided that Claims 49-51 and 53 are canceled and that Claim 54 is rewritten in independent form by including the limitations of Claim 53. The Examiner also will review the references filed September 27, 2004.